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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,933	09/24/2003	Marc J. Beacken	M.BEACKEN 8	4603

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EXAMINER	
PHUONG, DAI	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/669,933	BEACKEN, MARC J.	
	Examiner	Art Unit	
	Dai A Phuong	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *04/04/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Schwartz et al. (U.S. 6,353,600).

Regarding claim 1, Schwartz et al. disclose a resource brokering system for use with a wireless communication cell having at least one aperture array (col. 3, lines 21-27. Specifically, Schwartz et al. recite a plurality of base-station units, one or more remote cells, each equipped with **S directional antennae**), comprising: a virtual sector broker (**management system 11**) configured to generate, in response to a resource request, an allocation request based on available wireless communication resources of said cell subjected to a brokering process (fig. 2, col. 5, lines 22-41. Specifically, Schwartz et al. recite as the traffic increases in a non-uniform manner, **S4 is allocated to cell 32** and assigned to one of three antennae, while the other two antennae in cell 32 continue to handle the original S1, as shown in FIG. 3B. **S5 and S6 are allocated to cell 31**, such that each of the three antennae in cell 31 now handles a different CDMA signal, also as depicted in FIG. 3B. As the traffic further grows, eventually **each cell is split into 3 sectors**, where each sector is served by a different CDMA signal, as shown in FIG. 3C); an internal policy broker database associated with said virtual sector broker (fig. 2, col. 6, lines 26-30 and col. 6, lines 48-50. Inherently, the centralized base station site 20 includes a database that stores the necessary software to accomplish the stated task or functionality); and a virtual sector

formation unit, **RF router**, configured to employ said at least one aperture array to provide dynamic virtual sectorization of said available wireless communication resources in response to said allocation request (fig. 2 and fig. 3C, col. 6, lines 30-37. Specifically, Schwartz et al. recite an optimization algorithm is executed and its results are used to **instruct the RF router on how to distribute** the CDMA signals from the base-station units to the antennae in the remote cells, e.g. please see col. 6, lines 51-64).

Regarding claim 2, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the source brokering system wherein said available wireless communication resources include **one selected from the group** consisting of: beam pattern specification, spectrum-on-demand, dynamic provisioning or excess spectrum capacity sales, channel access brokering, and multiple objective optimization schemes using said available wireless communication resources across a plurality of cell sites or sectors within a cell site (col. 5, lines 26-34).

Regarding claim 3, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the resource brokering system wherein said virtual sectorization includes substantially simultaneously forming dynamically assigned beam patterns (col. 6, lines 51-64).

Regarding claim 4, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the resource brokering system wherein said wireless communication resources are selected from the group consisting of: a spectrum (col. 6, lines 48-0), a code modulation (col. 7, lines 32-39), a beam pattern (col. 5, lines 29-34), a spatial directionality, a power, a time interval, and jointly optimized combinations thereof.

Regarding claim 5, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the resource brokering system wherein said virtual sector formation unit is further configured to receive and send signals of various forms from at least one wireless service provider via a transport network and perform up/down conversions of said signal forms (col. 7, line 29 to col. 8, line 4).

Regarding claim 6, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the resource brokering system wherein said wireless communication cell has at least two aperture arrays (col. 3, lines 21-29) and said virtual sector formation unit **(RF router)** is dynamically coupleable to said at least two aperture arrays via an optical network (col. 6, lines 34-41 and col. 7, lines 17-30. It should be noted that RF router is a subsystem which is located within the base-station site 40, please see fig. 2), said virtual sector formation unit further configured to employ said optical network to steer communication signals dynamically to different ones of said at least two aperture arrays in response to said allocation request (col. 6, lines 30-41 and col. 7, lines 17-30. It should be noted that RF router is a subsystem which is located within the base-station site 40, please see fig. 2).

Regarding claim 7, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the resource brokering system wherein said virtual sector broker is further configured to generate said allocation request based on said available wireless communication resources of a plurality of said wireless communication cells (col. 6, lines 30-37 and col. 6, lines 51-64).

Regarding claim 8, Schwartz et al. disclose all the limitation in claim 1. Further, Schwartz et al. disclose the resource brokering system wherein said resource brokering system is employed over a region having a plurality of wireless communication cells (col. 3, lines 21-29), said brokering process including deterministic and statistical determinations of allocations of said available wireless communication resources over said region based on a restriction of cost, time, usage or coverage (col. 3, lines 1-15).

Regarding claim 9, Schwartz et al. disclose a method of brokering resources of a wireless communication cell having at least one aperture array (col. 3, lines 21-29), comprising: generating, in response to a resource request, an allocation request based on available wireless communication resources of said cell subjected to a brokering process (col. 5, lines 22-42); and employing said at least one aperture array to provide dynamic virtual sectorization of said available wireless communication resources in response to said allocation request (col. 5, lines 29-42 and col. 6, lines 30-37).

Regarding claim 10, this claim is rejected for the same reason as set forth in claim 2.

Regarding claim 11, this claim is rejected for the same reason as set forth in claim 3.

Regarding claim 12, this claim is rejected for the same reason as set forth in claim 4.

Regarding claim 13, Schwartz et al. disclose all the limitation in claim 9. Further, Schwartz et al. disclose the method further comprising receiving baseband signals from at least one wireless service provider via an optical network and performing up/down conversion of said baseband signals (col. 7, line 31 to col. 8, line 4).

Regarding claim 14, Schwartz et al. disclose all the limitation in claim 9. Further, Schwartz et al. disclose the method wherein said wireless communication cell has at least two aperture arrays coupled to an optical network (col. 30-42), said method further comprising employing said optical network to steer communication signals dynamically to different ones of said at least two aperture arrays in response to said allocation request (col. 6, lines 51-64).

Regarding claim 15, this claim is rejected for the same reason as set forth in claim 7.

Regarding claim 16, this claim is rejected for the same reason as set forth in claim 8.

Regarding claim 17, Schwartz et al. disclose a wireless communication network, comprising: a plurality of wireless communication cells, each of said plurality of cells having at least one aperture array coupled to an optical network (col. 6, lines 24-41); a plurality of wireless service provider systems coupled to said optical network (col. 7, col. 16-30. Inherently, each remote cell 47, 48 and 49 includes a base station or base station transceiver); and a resource brokering system that receives resource requests from said plurality of wireless service providers (fig. 2, col. 5, lines 22-42. Notice that, the base-station site 20 includes the management system 27 that monitors wireless devices request channel resource in each cell), including: a virtual sector broker configured to generate, in response to a resource request, an allocation request based on available wireless communication resources of said cell subjected to a brokering process (col. 5, lines 22-42), an internal policy broker database associated with said virtual sector broker (fig. 2, col. 6, lines 26-30 and col. 6, lines 48-50. Inherently, the centralized base station site 20 includes a database that stores the necessary software to accomplish the stated task or functionality), a virtual sector formation unit configured to employ said at least one aperture

array to provide dynamic virtual sectorization of said available wireless communication resources in response to said allocation request (col. 6, lines 30-37), a per service provider broker agent (col. 7, 16-30. Inherently, each remote cell 47, 48 and 49 includes a base station or base station transceiver), a per resource provider broker agent (col. 6, lines 48-564), a plurality of aperture array (col. 5, lines 38-42), and opportunistic measurement functional unit (col. 7, lines 7-15).

Regarding claim 18, this claim is rejected for the same reason as set forth in claim 2.

Regarding claim 19, this claim is rejected for the same reason as set forth in claim 3.

Regarding claim 20, this claim is rejected for the same reason as set forth in claim 4.

Regarding claim 21, Schwartz et al. disclose all the limitation in claim 15. Further, Schwartz et al. disclose the wireless communication network wherein said virtual sector formation unit further receives baseband signals from said plurality of wireless service provider systems and performs up/down conversions of said baseband signals (col. 7, line 31 to col. 8, line 4).

Regarding claim 22, Schwartz et al. disclose all the limitation in claim 15. Further, Schwartz et al. disclose the wireless communication network wherein said virtual sector formation unit dynamically coupleable to said at least one aperture array of each of said plurality of cells via said optical network, said virtual sector formation unit employing said optical network to steer communication signals dynamically to different ones of said at least one aperture array or each of said plurality of cells in response to said allocation requests (col. 6, lines 24-41).

Regarding claim 23, Schwartz et al. disclose all the limitation in claim 15. Further, Schwartz et al. disclose the wireless communication network wherein said plurality of cells is employed over a region and said brokering process includes statistical determination of allocations of said available wireless communication resources over said region based on a restriction of cost, time, usage or coverage (col. 3, lines 1-15).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Akyol et al. (U.S. 6895248) dynamic resource allocation

Bunnell (U.S. 6192405) access to resources in a distributed system

Smith et al. (Pub. No: 20040181476) Dynamic network resource brokering

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dai A Phuong whose telephone number is 571-272-7896. The examiner can normally be reached on Monday to Friday, 9:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dai Phuong
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Date: 06-23-2005

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